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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,389

12/19/2005

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EXAMINER

HANAN, DEVIN J

ART UNIT

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3745

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,389	Applicant(s) SANAGI ET AL.	
	Examiner DEVIN HANAN	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/19/2005 & 5/3/2006</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS 5/16/2007</u> . |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 15-16 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurusu et al. (U.S. Patent 5,693,992).

Kurusu et al. disclose an impeller of a centrifugal fan comprising:

a main plate (fig 8, 21) configured to rotate around a rotating shaft;

a plurality of hollow blades (25 and 24 connect to leave a hollow space) annularly disposed around the rotating shaft, each of the hollow blades including a first surface (24) portion integrally molded with or fixed to the main plate (21) and a second surface (25) portion attached to the first surface portion, the first and second surface portions forming a hollow space; and

a side plate (38) integrally molded with or fixed to the first surface portions, the hollow blades being disposed between the main plate and the side plate, the main plate, the hollow blades and the side plate being configured to take in gas from a rotating shaft direction and blow out the gas in a direction intersecting the rotating shaft, and

each of the second surface portions (25) forming at least a part of a negative pressure surface.

Regarding claim 2, Kurusu et al. disclose an impeller of a centrifugal fan comprising:

a main plate (fig 8, 21) configured to rotate around a rotating shaft;

a plurality of hollow blades (25 and 24 connect to leave a hollow space) annularly disposed around the rotating shaft, each of the hollow blades including a first surface (24) portion integrally molded with or fixed to the main plate (21) and a second surface portion (25) attached to the first surface portion, the first and second surface portions forming a hollow space; and

a side plate (38) integrally molded with or fixed to the first surface portions, the hollow blades being disposed between the main plate and the side plate (fig 8),

the main plate, the hollow blades and the side plate being configured to take in gas from a rotating shaft direction and blow out the gas in a direction intersecting the rotating shaft, and

the second surface portions being configured to remain attached to the first surface portions while centrifugal force resulting from the rotation of the main plate act thereon (24 hooks into 25).

Regarding claims 15 and 18, Kurusu et al. disclose the first surface portions are separately molded (the two surfaces are made separately and then connected together when hooks 24 lock into blades 25).

Regarding claims 16 and 19, Kurusu et al. disclose that the fan could be welded (col. 2 lines 9-15), but is silent as to the type of welding. The claimed phrase “by laser welding” is being treated as a product by process limitation; that is, that the fan is made by laser welding. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Once a product appearing to be substantially the same or similar is found, a 35 USC 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See MPEP 2113.

Thus, even though Kurusu et al. is silent as to the process used to make the fan, it appears that the product in Kurusu et al. would be the same or similar as that claimed; especially since both applicant's product and the modified prior art product can be welded.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-9, 11-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerken et al. (U.S. Patent 6,508,627) in view of Atarashi et al. (U.S. Patent 4,971,521).

Gerken et al. discloses an impeller of a centrifugal fan comprising:

a main plate (fig 2, 13) configured to rotate around a rotating shaft;
a plurality of hollow blades (11) annularly disposed around the rotating shaft; and
a side plate (15) integrally molded with or fixed to the first surface portions,
the hollow blades being disposed between the main plate and the side plate (fig
2),

the main plate, the hollow blades and the side plate being configured to take in
gas from a rotating shaft direction and blow out the gas in a direction intersecting the
rotating shaft.

Gerken et al. does not teach that each of the hollow blades including a first
surface portion integrally molded with or fixed to the main plate and a second surface
portion attached to the first surface portion, the first and second surface portions
forming a hollow space and

each of the second surface portions (25) forming at least a part of a negative
pressure surface

However, Atarashi et al. teaches of a blade made up of two surface portions fixed
or molded to the main plate for the purpose of removing the disadvantages such as
tapping the blades for set screws (col. 1-2 lines 63-2 and col. 2 lines 11-16).

Since Gerken et al. and Atarashi et al. are both from the impeller art, the purpose
disclosed by Atarashi et al. would have been recognized in the pertinent art of Gerken
et al. It would have been obvious at the time the invention was made to one having
ordinary skill in the art to use the two surface hollow airfoils of Atarashi et al. in the

invention of Gerken et al. for the purpose of removing the need to tap the blades for set screws (col. 1-2 lines 63-2 and col. 2 lines 11-16).

Regarding claim 2, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 1 above and the first and second surface portions are designed to remain attached (they are typically connected by welding, Gerken, col. 2 lines 48-52).

Regarding claim 3, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 1 above and discloses inserting a portion of the second surface into the first surface (the leading edge of 3 is inserted into 1 at 4).

Regarding claim 4, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 1 above and the first surface portion and the second surface portion are separately molded (the blade is attached to the first surface, Gerken, col. 2, lines 48-52).

Regarding claims 5 and 9, the modified apparatus of Gerken teaches that the fan could be welded (col. 2 lines 48-52), but is silent as to the type of welding. The claimed phrase "by laser welding" is being treated as a product by process limitation; that is, that the fan is made by laser welding. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Once a product appearing to be substantially the same or similar is found, a 35 USC 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See MPEP 2113.

Thus, even though the modified apparatus of Gerken is silent as to the process used to make the fan, it appears that the product in Gerken would be the same or similar as that claimed; especially since both applicant's product and the modified prior art product can be welded.

Regarding claim 7, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 1 above and a side plate guide mechanism for positioning the blades (a screw can be used to temporarily hold the blade).

Regarding claim 8, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 4 above.

Regarding claim 11, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 7 above.

Regarding claim 12, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 1 above and a blade shape retaining mechanism (ribs 2).

Regarding claim 14, the modified apparatus of Gerken discloses all of the claimed limitations as discussed in claim 1 above and a drive mechanism to rotate the plate (Gerken discloses a centrifugal fan in the abstract).

Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerken et al. (U.S. Patent 6,508,627) in view of Atarashi et al. (U.S. Patent 4,971,521).

The modified apparatus of Gerken discloses all of the claimed limitations as discussed in the rejection of claim 1 above, but does not disclose a higher light transmittance of the first surface portions.

Claims 6 and 10 are rejected under 35 USC 103(a) as unpatentable over Gerken in view of Atarashi. Gerken in view of Atarashi as modified in the rejection of claim 1 above, teach of using weldable materials as claimed. It is common practice in the art to change the light transmittance (color) of separate parts in order to better differentiate between parts during assembly. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the light transmittance of the modified apparatus of Gerken as an **engineering expedient**.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerken et al. in view of Atarashi et al. and further in view of Dorman (5,209,644).

The modified apparatus of Gerken discloses all of the claimed limitations as discussed in the rejection of claim 1 above, but does not disclose the second surface portion includes plural concavo-convexities formed in surfaces of the second surface portion.

However, Dorman teaches of concavo convexities (fig 3) for the purpose of increasing aerodynamic efficiency (abstract).

Since Dorman, Gerken et al. and Atarashi et al. are both from the airfoil art, the purpose disclosed by Dorman would have been recognized in the pertinent art of Gerken et al. It would have been obvious at the time the invention was made to one

having ordinary skill in the art to use the concavo convexities of Dorman in the modified apparatus of Gerken et al. for the purpose of increasing aerodynamic efficiency (abstract).

Claims 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurusu et al.

Kurusu et al. disclose all of the claimed limitations as discussed in the rejection of claim 16 and 19 above, but does not disclose a higher light transmittance of the first surface portions.

Claims 17 and 20 are rejected under 35 USC 103(a) as unpatentable over Kurusu et al. Kurusu et al. teach of using weldable materials as claimed (col. 2 lines 9-14). It is common practice in the art to change the light transmittance (color) of separate parts in order to better differentiate between parts during assembly. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the light transmittance of the parts of Kurusu et al. as an **engineering expedient**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devin Hanan whose telephone number is 571-272-6089. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on 571-272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devin Hanan/
Examiner, Art Unit 3745

/Edward K. Look/
Supervisory Patent Examiner, Art Unit 3745